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TORREYA

April, 1904

THE EARLY WRITERS ON FERNS AND THEIR
COLLECTIONS—II. J. E. SMITH, 1759-1828;
SWARTZ, 1760-1818; WILLDENOW, 1765-1812

BY L. M. UNDERWOOD

Aside from minor changes in the generic arrangement of Linnaeus* and occasional additions to the number of species by various writers, notably Thunberg, Forskål, Forster, Lamarck, and Cavanilles, the principal generic changes as well as the more extensive additions to fern species up to the end of the first decade of the last century were made by Smith, Swartz, and Willdenow. Sir James Edward Smith is not to be confused with the less eminent, but so far as fern lore is concerned, more distinguished John Smith who flourished a half century or more later. Smith published in 1793 an important paper† which was one of the first attempts at a natural classification of ferns. He established the genera *Woodwardia*, *Vittaria*, *Davallia*, *Cyathea*, *Hymenophyllum*, *Gleichenia*, and *Danaea*. While some of these, like *Cyathea*,‡ for example, were highly unnatural groups, the

*Theodor Holm (TORREYA, 3: 187-188) has taken exceptions to my statement regarding the types of Linnaeus. It is well known that Linnaeus' one-line descriptions of ferns are worthless, and in many cases he gives only citations. As I have shown, among the ferns at least, his types are equally so, and Mr. Holm says even worse things about them. There is therefore nothing left on which to depend for identifying his types but his citations and, on these, rational interpreters of Linnaeus have hitherto depended for identifications. If now, as Mr. Holm avers, these are not to be regarded as typical of his species but merely as giving "some idea of their general habit or aspect," Linnaeus becomes from a systematic standpoint even more useless than we have given him credit for being.

We examined the specimen preserved under *Osmunda Lunaria* in herb. Linnaeus last summer and it was labeled as before stated.

†Tentamen Botanicum de Filicum generibus dorsiferarum. Mem. Acad. Sci. Turin, 5: 401-422. pl. 9. 1793 (also sep. pp. 22). Smith also published various articles on ferns in Rees' Cyclopaedia, which was published between 1802 and 1819.

‡*Cyathea* besides containing three genera of tree ferns as now understood included also two of our delicate bladder ferns (*Filix*)!

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generic arrangement was far in advance of anything that preceded it.

Smith was president of the Linnean Society (London) for many years and after his death his collection was purchased by the society, at whose rooms it is now easily accessible for examination. The plants are well preserved, but, as in many of the early collections, many ferns are represented by tips of leaves only and some of these have served as types of new species.

Olof Swartz issued the first formal enumeration of all known ferns in his *Synopsis Filicum* (1806) and presented the next general conspectus of fern genera. In this and previous works he described a large number of species and established the genera *Marattia*, *Grammitis*, *Aspidium*, *Diplazium*, *Lygodium*, *Botrychium*, *Cheilanthes*, *Anemia*, *Mohria*, and *Psilotum*. His *Synopsis* recognized thirty-eight genera and his work is usually regarded as the first real datum-line for the systematic study of ferns. To show how clearly he outlined the system so long familiar to fern students in the later *Synopsis Filicum* of Hooker and Baker (1868, 1874) we give an outline of his classification:

I. GYRATAE

Soris nudis

ACROSTICHUM (46*), MENISCIUM (3), HEMIONITIS (8), GRAMMITIS (13), TAENITIS (1), POLYPODIUM (102).

Soris indusiatis

ASPIDIUM (93), ASPLENIUM (75), CAENOPTERIS (9), SCOLOPENDRIUM (2), DIPLAZIUM (9), LONCHITIS (4), PTERIS (79), VITTARIA (6), ONOCLEA (12), BLECHNUM (14), WOODWARDIA (8), LINDSAEA (14), ADIANTUM (32), CHEILANTHES (16), DAVALLIA (29), DICKSONIA (16), CYATHEA (10), TRICHOMANES (21), HYMENOPHYLLUM (28).

II. SPURIE GYRATAE

Capsulis rimatis

SCHIZAEA (6), LYGODIUM (11), ANEMIA (17), MOHRIA (1), OSMUNDA (6), TODEA (1), MERTENSIA (7), GLEICHENIA (3), ANGIOPTERIS (1).

* The numbers in parentheses indicate the number of species of each genus described in the *Synopsis*.

III. AGYRATAE

Capsulis multilocularibus

MARATTIA (4), DANAEA (2).

Capsulis bivalvibus

OPHIOGLOSSUM (9), BOTRYCHIUM (7).

Besides the above genera Swartz also treated under the Lycopodineae the genera LYCOPODIUM (65), TMESIPTERIS (1), and PSILOTUM (2).

Swartz' work is of special importance to us at this time since many of his species were based on collections he made in the West Indies when he visited Jamaica and Haiti in the years 1784-1786. His collection, which we have not yet seen, is preserved at the Academy of Sciences at Stockholm and is said to be in a most excellent state of preservation. Various writers on West Indian ferns, notably Jenman, have referred to various types of Swartz as being found in the British Museum. It is true that some of the earlier botanists occasionally distributed their type material during their lifetime, and it is also true that some specimens of ferns came to the British Museum from Swartz, but there seems to be no warrant or at least no certainty that any of his types ever came there: in fact all the probabilities are against it, and his types must be sought in his native country. Swartz also published shorter papers on ferns, the last being published in 1817, only a year before his death.

The next enumeration of ferns was made by Willdenow in 1810* in the fifth volume of his edition of *Species Plantarum*, although his work on ferns had commenced in 1802 with his publication of the genera *Todea* and *Hydroglossum* (*Lygodium*) followed in 1804 by *Mertensia*, and in 1809 by *Struthiopteris* and *Lomaria*. His enumeration included 43 genera of ferns and 1008 species, enriched by the collections of Humboldt and Bonpland in meridional America, as well as by those of Bory and others mostly described here as new. Willdenow's collection is

*An enumeration of the known ferns was commenced by Lamarck in the *Encyclopédie Méthodique* in 1783 and was completed by Poiret in 1808. This however contained only 444 species in contrast with the 716 described by Swartz in 1806, and 1008 described by Willdenow in 1810.

maintained by itself in the Kgl. Bot. Museum at Berlin. Each specimen is numbered serially and all is thoroughly indexed so that the collection is more readily accessible than any other of the historic collections. The sheets enclosed in covers tied with tape after the usual continental method, are arranged in volumes of convenient size and stand side by side in a special case in the room used until recently by the late Professor Schumann for a study. The sheets are a trifle larger than foolscap paper and the plants are mostly in an excellent state of preservation. There is sometimes a little doubt about his "types" being the originals on which he based his species, as he is said at times to have given away his originals in those species of which he afterwards secured better material. Our own Muhlenberg was a correspondent of Willdenow so that his collection includes many species from the United States.

WILLIAM MARRIOTT CANBY

BY H. H. RUSBY

Mr. William Marriott Canby, one of the foremost citizens of Wilmington, as indeed of the State of Delaware, died on March 10 at Augusta, Georgia, to which place he had gone to recover from the effects of a series of colds from which he had been suffering during the winter. In his death, the botanical fraternity of America loses one of its most genial associates, as well as one of its keenest and most judicious discriminators of plant forms.

Mr. Canby was born in Philadelphia, on March 17, 1831. His early education was obtained in the schools, mostly private, of Wilmington, whither his parents moved during his early childhood. He afterward attended a Quaker institution at Chadd's Ford, on the Brandywine. After his graduation, the state of his health apparently demanding an out-of-door life, he engaged in agriculture, near Coatesville, Pa. This country life was chiefly responsible for the development of Mr. Canby's very great love of plant-life, although inheritance, and an early association with students of botany, had already given him a predilection for that study. He studied and collected the local flora of Coatesville and vicinity, and in 1858 indulged in the great pleasure of a